REMARKS

Reconsideration and allowance of the subject application in view of the foregoing amendments and the following remarks is respectfully requested.

Claims 20-27 and 29-37 remain pending in the application. Claims 20, 23, 30-32, 34 and 36 have been amended. Applicant appreciatively notes that claims 25-27, 29-31, 33-37 contain allowable subject matter. Claim 29 have been rewritten in independent form by incorporating all the limitations of base claim 28. Claims 28 and 38 have been canceled without prejudice or disclaimer. Claim 39 has been added and finds support at page 9, line 32-page 10, line 13 of the specification. Thus, claims 20-27, 29-37 and 39 are presented.

Objection to the specification

In the Office Action, the specification is objected to as failing to provide proper antecedent basis for the claimed subject matter, i.e., the claimed "means for determining a measure of proximity" and "automated calculation means" recited in claim 38. In response, claim 38 has been canceled, therefore, the objection should be withdrawn.

Rejections under 35 U.S.C. 112

Claim 38 is rejected under 35 U.S.C 112, first and second paragraphs as attempting to define a product (i.e., machine or apparatus) entirely by virtue of its function, in the absence of any recited structure. In response, claim 38 has been canceled, therefore, the rejection of claim 38 should be withdrawn.

Rejections under 35 U.S.C. 102

Claims 20-22, 28, 32 and 38 are rejected under 35 U.S.C 102(e) as being anticipated by Wenzel et al. (U.S. PAP 2004/0037467), hereinafter, Wenzel. Applicant respectfully traverses the rejection for the reasons discussed below.

Claim 20 recites a first step of associating each point of the first contour, with a point of the second contour determined as the closest, and a second step of pairing each point of the second contour with one point of the first contour if said one point of the first contour exists, by determining the point of the first contour which is closest from among the set of points of the first contour that are associated with the point of the second contour in the first step.

As exemplary embodiments disclosed in the specification pages 8-9, with reference to figures 2 and 3 of the present application, a first image, contour CI with points I_k; and a second contour, template contour CM with points M_i are illustrated according to the exemplified first associating step and second pairing step.

With respect to the recited first step in claim 20, the point M_{15} of second contour CM is associated with three points of the first contour CI: points I_{24}, I_{28}, I_{29} as shown in Fig. 3 of the present application.

Also, with respect to the recited second step in claim 20, the point I_{24} which is paired with point M_{15} is the closest one from among the set of associated points I_{24}, I_{28}, I_{29} with point M_{15} in the first step.

It is noted that the Examiner alleges that cites Wenzel discloses the claimed first associating step and second pairing step at paragraphs [191], [199-200] of Wenzel. Applicant respectfully disagrees with the Examiner.

In particular, [191] refers to "*equation (9".)* Equation (9) is found in [118] – [119] and corresponds to measure of similarity between the two discrete, N points, contours

$a=(a_0,....a_{N-1})$ and $b=(b_0,....b_{N-1})$. A value of substantially 0 indicates a match between the two curves.

Paragraph [0128] of Wenzel discloses that "it is noted that polygons a and b have the same number of points otherwise a match would clearly not be possible". That is to say, Wenzel requires that the two curves a, b have the same number of points, which means that each point of curve a is associated with one point of curve b. The match is obtained through normalization re-sampling, and affine transformations applied to the curves, iteratively. This implies in particular, rotation, and translations, re-normalization with respect to average position.

In sum, in Wenzel, a successful match requires discretization and normalization curves a and b having same number of points, normalized distribution, and affine transformations, iteratively. (See the cited portions from Wenzel below)

> -[0089] "The curve that is extracted from the image is given as a set of points that may be very irregular. Therefore, splinning and then re-sampling may be applied to the curve such that any extracted curve always has the same number of points, and the points are homogeneous".
> -[0118] "Let =$(a_0,....a_{N-1})$ and $b=(b_0,....b_{N-1})$ be two discrete set of points .....The goal is the determination of a similarity measure between a and b where affine transformations are valid operations. (....) a matching routine where shift, rotation and scaling are valid operations."
> -[0128] "Algorithm 2 addresses the issue of matching discrete curves wherein the number of points is fixed .....polygons a and b have the same number of points-otherwise a match would clearly not be possible".
> -[0183] "a general requirement that for valid comparisons between discrete curves, the curves should be of the same (normalized) length, should have the same number of points, and that those points should be uniformly distributed.
> -[0184] "thus (...)prior to computing, the curves may be transformed,re-normalized, re-sampled one or more times in iterative fashion to refine the curves for final comparison".
> -[0190] " the method may continue as described above, iterating until the termination criteria is met".

The method in Wenzel is based on the existence of an-affine transform relation ship between the curves, and iteratively applying affine transformation so as to obtain a match. It implies working on curves having a same number of points. And the proximity measure applying equation 9 is based on a point to point pairing based on that same number of points and affine transformation hypothesis.

Indeed, as presented in paragraph [118] of Wenzel, "polygons a and b have the same number of points-otherwise a match would clearly not be possible" clearly discloses that the Wenzel method stands in the affine transform, with normalized N points curves, so that there is a natural one to one point pairing.

Accordingly, if polygons/curves a and b have not the same number of points, the matching is impossible in Wenzel.

The method according to exemplified embodiments of the present application is not an iterative one. There is an image contour and template contours of a collection of template contours. As recited in claim 20, the claimed method includes an associating step, starting from the first contour and associating each point of the first contour with one point of the second contour, and then a pairing process, starting from the second contour, so as to choose among the points of the first contour to which it has been associated, the closest one.

The non iterative, two claimed steps, i.e., a first step of associating and a second step of pairing, enable an improved measure of proximity of a image contour to each one of the template contours of a collection, in view of spurious points in the image contour. See, the specification of the present application at page 3, lines 17-27; page 4, line 31-page 5 line 2.

Accordingly, Wenzel fails to disclose or suggest at least a first associating step as claimed. Also, Wenzel fails to teach a second pairing step following said first associating step as claimed.

It should be noted that Claim 20 claims the method including a first associating step and a second pairing step to achieve a univocally pairing where one point of the second contour is associated with only one point of the first contour.

The claimed method according to disclosed embodiments of the present application is a non iterative matching method, in particular relative to false hypothesis due to spurious points in the image contour. The disclosed embodiments of the present application have advantages over Wenzel which applies iterative affine transformations. The claimed invention is a method that can be applied the same straight way for any image contour for target identification purpose.

Accordingly, for at least the reasons discussed above, claim 20 should be patentable over the art and this rejection should be withdrawn.

The dependent claims depend on claim 20 and should be patentable over the art for the reasons advanced with respect to claim 20. The rejection should be withdrawn.

Rejections under 35 U.S.C. 103

Claims 23-24 are rejected under 35 USC 103(a) as being unpatentable over Wenzel in view of Huttenlocher et al. (U.S. Patent 6249604), hereinafter, Huttenlocher).

Applicant respectfully submits that Huttenlocher does not cure the deficiencies of Wenzel. Claims 23-24 depend on claim 20 and should be patentable over the art for the reasons advanced with respect to claim 20. The rejection should be withdrawn.

New claim

New claim 39 has been added and recites similar feature to that of allowable claim 29. Therefore, claim 39 should also be allowable.

Conclusion

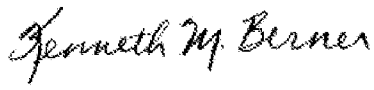
All objections and rejections having been addressed, it is respectfully submitted that the application is in condition for allowance and a Notice to that effect is earnestly solicited.

The Examiner is invited to telephone the undersigned, Applicant's attorney of record, to facilitate advancement of the present application.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 07-1337 and please credit any excess fees to such deposit account.

Respectfully submitted,

LOWE HAUPTMAN HAM & BERNER, LLP



Kenneth M. Berner
Registration No. 37,093

1700 Diagonal Road, Suite 300
Alexandria, Virginia 22314
(703) 684-1111
(703) 518-5499 Facsimile
Date: November 6, 2009
KMB/CHY/ser